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# The Developing Process of the Digital Game Which Supports Well-being of Small Children

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**Category:** Research in-progress

## Abstract

The concept of well-being, both planet and individual, is clearly visible in the Sustainable Development Goals. In this article the focus is on the individual's well-being, more closely on children's well-being. In this article is described the developing process of the digital game to evaluate and support the well-being of children aged 5-8. The aim is to develop tool whereby subjective well-being data from small children can be collected in a digital format, with a fun, child-friendly way. The description follows the steps from idea to first prototype. Developers of the product consist actors of children's services, HEIs students and game designer from the private sector from the metropolitan area of Finland. The ecosystem which works around the game idea gives different kinds of knowledge, skills and test bed to develop a solution. The designing process was carried out as a Research and Development activity at Laurea University of Applied Sciences and it is part of the Finnish national LAPE project that is part of the government's top program.

# 1 Introduction

The need to understand child well-being in a holistic way has been receiving growing attention within policy, academic research and literature. Research can be divided to those which focus more on deficit/vulnerability approach (Ben-Arieh and Goerge 2001; Pollard and Lee 2003; Fattore et al. 2007) and those which focus on the developmental approach such as human capital and social skills. The third one, child rights perspective, emphasizes rights-based approaches to children as human beings and thereby incorporating the direct input of the child in the process of determining what their well-being might be and how it is best measured (Casas 1997; Ben-Arieh 2007). Indicators do not however tell how children themselves describe their own well-being. That understanding concept of well-being needs to take place within a context of needs, rights and want (Marjanen, Ornellas & Mäntynen 2016). Even though this need has been recognized in well-being of children research there are still not many indicators to measure especially child's will.

LAPE is Finnish government's key project which main aim is to develop services for children and families. LAPE, services for children and family's program, is a part of the health, social services and regional government reform. Services for children and families will be reformed 2016–2018. The main objectives of this reform aims to transform the welfare services into an integrated system, strengthen basic services and shift the focus towards preventive work and early support. (Program to address child and family services 2017.) Basic services will be strengthened, and the focus will be shifted towards preventive work and early support and care services. The best interests of the child and support for parenthood are primary issues in the reform. These changes will help to support children's, young people's and families' own resources and reduce inequalities.

Laurea University of Applied Sciences works as a partner in LAPE project. Almost all municipalities in the Helsinki metropolitan area are involved in the project. The sub-project in metropolitan area is extensive and over 30 separate working groups have been started to reach the program goals. Laurea's role in this project is to develop digital tool which professionals who work with children can use to collect subjective well-being information from small children age 5-8. This links to sustainable development goals of UN promoting the well-being for all at all ages.

In this article is described the research based developing process of well-being indicators. The process has happened in regional ecosystem which consists of expertise from higher education but also from regional experts from public and private sector. The development of scorecard is still ongoing. The next step is game application which developing process has already started.

## **2 Subjective well-being of children**

Defining well-being is not simple thing to do and there is no consensus among scientists on what the definition of well-being should contain. It can be said that well-being is a multidimensional phenomenon. The subjective approach refers to child's own experience and assessment of their well-being and general social conditions. Subjective well-being is defined, in some cases, as a synonym for happiness, life satisfaction, or quality of life. For instance, self-realization and social relationships are seen as elements of subjective well-being. (Konu 2002, 15-16; Diener, Oishi & Lucas 2009, 187; Veenhoven 2008, 45).

In the WHO definition, health is understood so broadly that this definition can also be considered as a definition of well-being: "Health is a state of complete physical, mental and social well-being and not just the absence of disease or infirmity." (WHO 1946). This WHO definition covers the physical, mental and social well-being dimension. Holistic, philosophical research perspective has given Schues and Rehmann-Sutter (2013). They define the child's well-being in connection with the child's physical, mental, personal, cultural and social development, which leads to meaningful life in other people. A more structural but also societal approach is presented by Minkkinen (2013), outlining the well-being of the child from the physical, psychological, social and material situation. He emphasizes the positive elements of well-being more than negative and related subjective wellness research into the satisfaction of life and happiness index. According to Marshford-Scott, Church and Tayler (2012), the views of children's well-being are social and economic, psychological and mental health, philosophical and educational aspects.

Physical-material well-being elements can be considered as part of objective well-being but with living and health-related experiences they also represent a strong sense of subjective well-being. Social well-being can be thought to need such relationships that strengthen the overall well-being of the individual. Respect, empathy, and authenticity are key words in such relationships. (Stewart-Brown 2004, 31.) Psychical well-being is also a prerequisite for the establishment of working social relationships (Myllyniemi & Plot 2006, 144-146).

Various studies have shown that warm and affectionate education of children leads to psychological well-being and success of life. To ensure psychological well-being, the child should have sufficient care and guidance at home, but also protection and control. (Myllyniemi & Plot 2006, 144-146.) Psychological well-being supports the achievement of social well-being. Positive social relationships and the mental health of the individual are essential. Mental and social factors are important for the well-being builders. (Larsen & Eid 2008, 3-6.) Social interaction is essential for the normal mental development and balance of the child. The core issues of interaction are the

connection between the other and the second individual's presence. (Järventie 2001, 107-108). Social and psychological well-being complement each other. One can imagine that the individual's well-being is not balanced without the fulfillment of both of these subjective elements. Similarly, prosperity is not balanced without considering all its components. Physical, psychological and social well-being are a very distinct entity. Physical and material well-being are factors influencing the individual's experiences and thus have a very significant impact on the individual's social and mental wellbeing.

### **3 Sustainable Development Goals of United Nations**

In September 2015 UN member countries adopted a plan called Agenda 2030. The plan consists of 17 Sustainable Development Goals (SDG) and 169 targets that guide the country's decision-making in areas of critical importance for humanity and the planet and are monitored by both global and state's own indicators. Three dimensions of sustainable development - economic prosperity, social justice and a good state of the environment are visible in the SDG. Each country is committed to include these goals to their concrete policy and actions.

The concept of well-being, both planet and individual, is clearly visible in the SDG. Not only in the 3th goal Good health and well-being but throughout the list of goals. In this paper we focus on the individual's well-being, more closely on children's well-being. Finland's last Agenda 2030 Implementation report (2017, 27) states that ensuring the well-being of children is one of the focus areas to strengthen a non-discriminating, equal and competent Finland. According to implementation report of Finland (2017, 50) one key goal is to strengthen the cooperation with children by engaging them in the national and international discussion around the subject. Finland's Agenda 2030 implementation report (2016, 13) acknowledges the fact that there are challenges including children to the process. Question is, how to interact with children in a way that enhances participation, is appealing and still gives reliable information of the well-being of individuals.

When evaluating well-being of children, one important indicator in Finland is Child barometer introduced in 2016. Barometer is part of a society's obligation to hear and listen every member and the obligation is based on both national legislation and the UN's Declaration of the rights of the child, which Finland ratified in 1991. (Luukkanen 2016, 7; Aira, Hämylä, Kannas, Aula & Harju-Kivinen 2014, 6-7). We wanted to take this well-being evaluation one step further and create a different, more fun way for children to be heard.

## 4 Steps in the Design of the Game: Past, Present and Future

This chapter describes the development process of the game prototype. An essential part of the process has been the research work that has been done to find the indicators needed for the game. It was important to find the most important indicators for the well-being of small children. The gamification of indicators has also proved to be challenging.

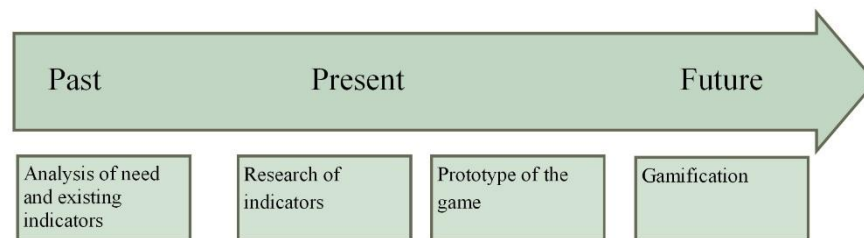


Figure 1. Steps of the design of the indicators

### Step One: Analysis of Need and Existing Indicators

The development of products should always be based on genuine social need. That is why the development of a new product should be based on a good needs analysis. This case started as a part of international Marie Curie research project which one aim was to understand concepts of vulnerability and well-being. According to analysis (Marjanen, Ornellas & Mäntynen 2016) the dominant international models demonstrate gaps when compared to theory and literature on child well-being and development. International well-being indicators represent a primarily political economy-based, material approach to defining and understanding child well-being. Indicators are still predominantly focused on a child's needs and rights, over that of his/her will and desire.

### Step Two: Research of Indicators

It was soon discovered that the problem is international and national. The dominant international models have failed to adequately incorporate indicators which reflect on e.g. civic and life participation. Existing models is also difficult to fit only one definition or theoretical approach of well-being. Especially small children voice is still missing in Finland even though country is well known about child friendly and participatory schools and daycares. The well-being of Finnish children is examined, among others,

on Finland's poverty indexation. Other types of repeatedly collected information on the well-being of young children is not available. In the case of older children, Finland is studying health behavior every two years. The WHO School Examination to measure school exams will be implemented in grades 5, 7, 9, every fourth years. There are also some issues of well-being in Pisa. In addition to these schools, a separate questionnaire can be submitted to both primary and secondary school pupils and to senior staff and staff. All of these produce very important information on well-being of Finnish children. But still for example maternity clinics and daycares based their analysis mostly on their own observations and discussions with parents.

The importance of hearing children also in child protection is well-known but methods varied a lot. Common tools are needed to support multi-professional teamwork. It is also important to note that the new childhood study highlights the perspective of children's rights, emphasizing the child's agency and ability. This approach involves an idea where a child is not seen as a passive subject but as a social actor who is already and is not just becoming one (Qvortrup 2012). According to Elden (2012), a new study on childhood has brought a Mixed-method approach to data collection in research (see also Gabb 2010; Mason 2006). We ended up collecting information in a multidimensional way, as this will enable a more complex understanding of the issue to be explored. The so-called Mosaic approach (Clark 2005), which can be defined as a Mixed-method, brings together both an individual and a community perspective. It utilizes traditional observation and interview methods, incorporating participatory tools. The approach emphasizes the child's own perception and consultation on their life, interests and concerns. The method emphasizes inclusion, reflection, and listening to children's own life experiences. (Clark 2005.) In the first phase, we decided to use the draw and tell method. According to (Liamputtong & Fernandes 2015) drawing makes it easier to say things that are difficult to say or express in other ways.

Research group, where was 12 students from master and bachelor studies, started their work with subjective well-being indicators in autumn 2017. Research group shared their work. For example, two teams interviewed children in spring 2018. These interviews have been collected from four big cities from Metropolitan area of Finland. So far 38 children have been interviewed so that we can ensure that the indicator contains well-selected and high-quality questions. At this point we had 17 questions and help questions for them. We noticed that when interviewing small children, no more questions can be asked. Six children were interviewed before the actual research part. After pilots we shaped questions. The main aim is that the questionnaires are understandable and the children are easy to answer for them.

During this research process we noticed that it is essential that the indicators measure positive things. Research situations should be nice and empowering for children. In our research psychological well-being was studied by four questions, all of which

provided essential information on the child's experiential well-being. Even though we avoided negative feelings and questions the most informative was, “when you have a bad feeling”. It gave plenty of information about fears. The most remarkable were loneliness and bullying. Social well-being was also examined through four questions. The question of who listens to you, was some of the children difficult to answer. In the context of the research results, the purpose of the questions is well-founded and all the questions of the subject produced a lot of information and questions are essential. We still noticed that in the future, social and physical well-being questions could be asked with a combined question of who cares for you. The question turned out to be informative. Questions related to physical well-being sought to explore the experience of children about their own health. Children's experiential knowledge of their own health status was very limited, perhaps because the issues of the subject were not directly related to illness or health. The most important conclusions were the importance of routines in everyday life which children emphasized in their speech.

Parents were also interviewed and their ideas and opinions have used to develop questionnaire during spring 2018. The analysis of the results is still not ready. These interviews, both children and families, were extremely important in process, because families also provided valuable feedback on the development of indicators.

End of spring 2018 there was also a workshop for professionals where existing material and develop tool were developed further. The main idea is that the whole ecosystem which is dealing with children is involved for the developing work. Practically this means that multi-stakeholders have engaged in open innovation and experimentation processes in real world contexts.

### **Step Three: Prototype of the Game**

International eHealth conference and its game hackathon gave the research group possibility to develop further the idea. During hackathon students and graphic designer tested some indicators to develop it into a playful form. Practical questions like, what happens before bedtime or what is your favorite food at home/kinder garden are quite easy to change to game format. Idea to use children's day and its routines as a game storyline arouse also from conference. (<https://www.telemedicine.fi/en/national-conferences/411-ehealth2018-national-conference-2018>)



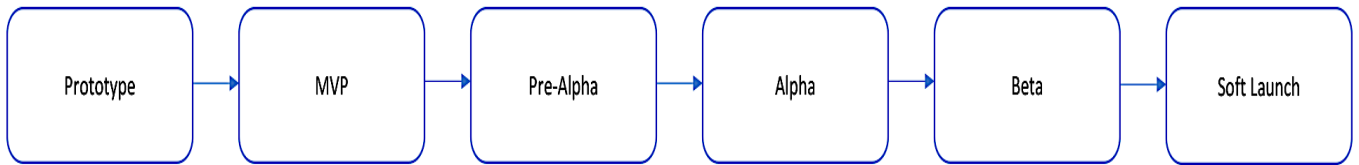


Figure 2. The timeline of the game development process

The process of the game designing and prototyping continues during summer and autumn. Game design timetable:

- i) Prototyping and building 3 rapid iterations and testing those among the children & educators;
- ii) Choosing one prototype to improve it to the MVP (Minimum Viable Product);
- iii) Testing the MVP among the children whom will provide feedback to the game developers and building Pre-Alpha;
- iv) Rinse & Repeat! Testing & building Alpha with the children;
- v) Testing & building Beta;
- vi) Soft launch in certain schools & kindergartens.

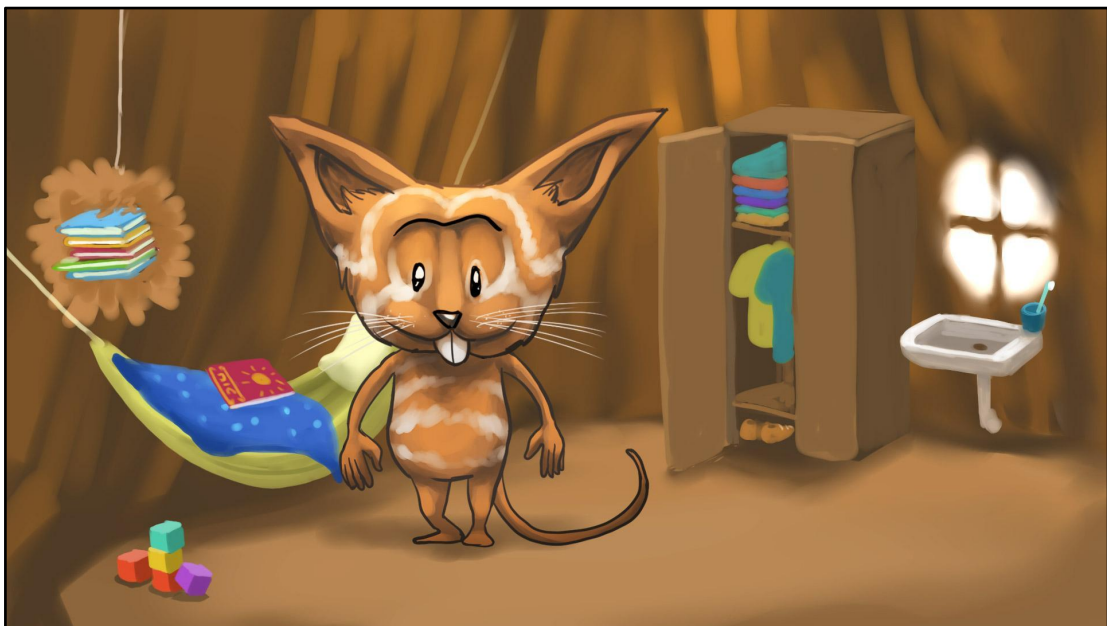
Game development into this stage should take approximately seven months. After the Soft Launch the Game the team will start to collect data from the gaming sessions and get feedback from children. New ideas and implementations in the game will start to correlate with the questions. It will take almost two years that the data starts to show accurate results. After that the new implementations will be easier to make and better data can be collected from wider audience.

It is important that the game is developed by active gamers and game developers with the help of the end-user, children. Psychologists, social workers, parents and teachers are important part of the development. There is still a big risk that the game loses its true potential if they are allowed to decide the game design and functions. According to Zichermann the problem is if parents and teachers got involved in the game design “kids could smell that shit from a mile away”.



Picture 1. There are three characters the player can choose to play with

There will be three characters to choose at the beginning of the game. All characters have different characteristics and temperaments. “The three” as we call them, have different personalities which reflect the moods of the player.



Picture 2. The players character home and the daily tasks are waiting

Ideas what data are collected are quite simple at the moment, one example is that the character awakens from its home and from the player is asked “How well did you sleep?” After the question there will be three emoji faces which allocate the answer: 1. Good, 2. Okay, 3. Bad.



Picture 3. Emoji faces for indicating the answers in the game

#### Step Four: Gamification

Previous research and game prototyping showed for research group that developing process of the good tool for children is much more difficult to do than we thought. One difficult thing is age of the children. Small children can't focus for a long time. It is particularly challenging to collect reliable data from small children. Understanding the concept of "well-being" also requires a lot to understand even from adult literate people. Mashford-Scott et al. al (2012) commented that children can also have as linguistic as metacognitive abilities to communicate with an adult researcher from their own perspective. That is why we have put lot of efforts to develop questions so that they are easy to understand but still there is straight link to subjective well-being concept. It is obvious that questionnaire can't be very long.

## 5 Conclusion

Our developing process has had and will have strong collaboration with stakeholders. It is extremely important that innovation and developing process has strong links to the real-world context because this way the innovations being developed are sustainable and support sustainable development of society. Even though development process of the tool to get new kind of research data from children is still in progress, first results and solutions have been found. The most important indicators are known and they based on theory of subjective well-being. Theory has modified to question form in child-friendly way. The last idea to develop product was to generate it to game format. Game format for data collection gives more time to collect the data

than just interview children. It is possible to have more game sessions and the need of an interviewer is not compulsory, so information can be gathered easier and cheaper.

The 3th goal of SDG emphasises the meaning of good health and well-being. We focused on children's well-being in this paper. According to many previous research results (see e.g. Ben-Arieh & Goerge 2001; Ben-Arieh 2007; Minkkinen 2013) measuring well-being requires new types of subjective indicators. Especially demands to give voice also for one of the most vulnerable group, children, have risen from research.

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